

**LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY  
OFFICE OF ENVIRONMENTAL SERVICES**

**STATEMENT OF BASIS<sup>1</sup>**

**PROPOSED PART 70 OPERATING PERMIT 3086-V0**

**Nucor Steel Louisiana Direct Reduction Iron Facility  
Consolidated Environmental Management Inc  
Convent, St. James Parish, Louisiana  
Agency Interest (AI) No. 157847  
Activity No. PER20100003**

**I. APPLICANT**

The applicant is:

Consolidated Environmental Management Inc  
1915 Rexford Rd  
Charlotte, NC 28211

Facility: Direct Reduction Iron Plant

SIC Code: 3312

Location: Nucor Steel Louisiana LLC  
9101 Highway 3125  
Convent Louisiana 70723

**II. PERMITTING AUTHORITY**

The permitting authority is: Louisiana Department of Environmental Quality  
Office of Environmental Services  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313

**III. CONTACT INFORMATION**

Additional information may be obtained from:

Mr. Kermit Wittenburg  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313  
Phone: (225) 219-3181

**IV. FACILITY BACKGROUND AND CURRENT PERMIT STATUS**

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<sup>1</sup> 40 CFR 70.7(a)(5) and LAC 33:III.531.A.4 require the permitting authority to "provide a statement that sets forth the legal and factual basis for the proposed permit conditions of any permit issued to a Part 70 source, including references to the applicable statutory or regulatory provisions."

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Consolidated Environmental Management Inc, Nucor Steel Louisiana, is a new Pig Iron manufacturing facility which is expected to begin construction such that operations can begin in 2012.

A number of Part 70 permits addressing other process units at the Facility have already been issued. These include:

Permit No.	Process Unit	Date Issued
2560-00281-V0	Nucor Steel Louisiana Pig Iron Facility	May 24, 2010
PSD-LA-740	Nucor Steel Louisiana Pig Iron Facility	May 24, 2010

This permit addresses all emissions unit at the Direct Reduction Iron (DRI) Facility.

### V. PROPOSED PERMIT/PROJECT INFORMATION

A permit application and Emission Inventory Questionnaire were submitted by Consolidated Environmental Management Inc on August 20, 2010 requesting a Part 70 operating permit for a DRI plant to be added to the existing property where the pig iron plant has been permitted. The application was deemed administratively complete in accordance with LAC 33:III.519.A on August 31, 2010.

Pursuant to LAC 33:III.519.A.4, a notice of the completeness determination was published in The News Examiner, Litcher, Louisiana, on November 18, 2010.

Additional information dated September 24, 2010 and October 22, 2010 was also received.

#### Process Description

The DRI process reduces the iron oxide content of iron ore pellets into iron metal through direct contact with a reducing gas. The effectiveness of this reduction process is called metallization, and the process equipment will be designed to achieve a metallization rate of at least 92% of the oxides within the ore. The reduction will take place in a countercurrent vertical shaft furnace, where reducing gas passes up through iron oxide pellets, which feed through the furnace by gravity. The major elements of the DRI process include the following: (1) iron oxide preparation; (2) reducing gas creation; (3) DRI reactor shaft furnace; (4) spent reducing gas preparation for reuse, (5) DRI product handling; and (6) ancillary operations, including a package boiler, two cooling towers, and a flare for emergency situations.

#### Iron Oxide Preparation

Iron oxide pellets are brought to the site by ship. The iron oxide pellets are unloaded onto the existing conveying system and transferred to the stockpile area. These activities are

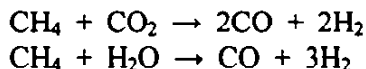
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covered by the existing NSLA permit; the following activities are covered by this application. From the stockpile, the iron oxide pellets are screened and coated with a lime reagent mixture in preparation for charging to the DRI reactor furnace. Emissions include particulate matter from the iron oxide screening, conveying and coating operations. Any excess iron oxide fines from conveying operations are transferred to the bricking plant.

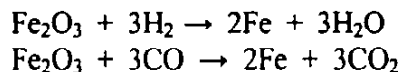
### Reducing Gas Preparation

Reducing gas requires preparation prior to introduction into the DRI reactor shaft furnace and much of the reactor furnace off-gas is reused in the process. Reducing gas is generated initially from natural gas, which is heated and reformed in the reformer at an elevated temperature. At this elevated temperature, the natural gas dissociates into a reducing gas rich in carbon monoxide and hydrogen, which are the primary reductants for the process:



### DRI Reactor Shaft Furnace

The DRI reactor shaft furnace is a countercurrent vertical shaft furnace, where reducing gas passed up through the iron oxide pellets, which are charged into the shaft furnace. The carbon monoxide and hydrogen of the reducing gas scavenge oxygen from the iron oxides from the iron oxide pellet charge in the shaft furnace, reducing the oxygenation state of the ores. The resulting products of the reduction process are pure iron, carbon dioxide and water:



The rate at which these reactions occur determines the residence time needed to metallize the iron oxide pellets into DRI product, which typically takes several hours. Once the metallization process is complete, the metallized DRI pellets are cooled and discharged to the cold product pressurized discharge bins.

Emissions from the DRI reactor shaft furnace include criteria pollutants and minimal HAPs from fuel combustion and metal dust.

### Spent reducing gas preparation for reuse

Once the process has initiated, spent reducing gas exits the top of the DRI reactor shaft furnace and is cooled, passed through a scrubber to remove entrained dust and excess moisture. A portion of this gas is then prepared for reuse as reducing gas by removing acid

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gases such CO<sub>2</sub>, H<sub>2</sub>S, and other reduced sulfur compounds. The reducing gas is passed through an amine absorber which strips it of the acid gas components. The cleaned reducing gas may then be adjusted with sulfur (reformer-less process) and/or natural gas prior to preheating and reforming in preparation for reintroduction into the DRI reactor shaft furnace. Oxygen injection may occur just prior to the shaft furnace to further enhance the reaction.

The acid gases removed by the amine absorption system will be passed through an iron-based catalyst bed to capture sulfur compounds. After passing through the catalyst, the resulting off-gas is near pure carbon dioxide. The captured carbon dioxide may be pipelined and sold to offsite customers. Sulfur is captured by a proprietary sulfur recovery system and is sold as a product or disposed, depending on quality and market conditions.

The second portion of the top gas leaving the furnace, hereafter referred to as the fuel gas, must be removed in order to balance the recycle loop, to prevent a buildup of CO<sub>2</sub> concentrations, and to recover the residual fuel value of unreacted carbon monoxide and hydrogen. After initial cleaning and cooling, discussed above, this gas is used as fuel gas for process heating.

### DRI Product Handling

From the cold product pressurized discharge bins, the DRI pellets are conveyed to the DRI silos, where they may, depending upon composition, be maintained under a nitrogen and oxygen purge until cured. The finished DRI pellets are then transported by conveyor to barges and are loaded for shipment. Fines from this process, and any iron oxide fines generated from the raw iron oxide handling processes, are routed to the brick plant where they are pressed into iron bricks and sold or reused in the steel or ironmaking process.

Emissions from DRI product handling include particulates.

### Ancillary Operations

Additional sources serving the DRI facility will include a package boiler, two cooling towers, and several dust collection points controlled by either a baghouse filter, or a water scrubber, or both.

### **Proposed Modifications**

The addendum dated September 24, 2010 requested that several sources permitted under the Pig iron Permit No. 2560-00281-VO be transferred into the new DRI facility. The sources involve raw material receipt and storage areas. An additional addendum dated October 22, 2010 modified the request.

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### VI. ATTAINMENT STATUS OF PARISH

<u>Pollutant</u>	<u>Attainment Status</u>	<u>Designation</u>
PM <sub>2.5</sub>	Attainment	N/A
PM <sub>10</sub>	Attainment	N/A
SO <sub>2</sub>	Attainment	N/A
NO <sub>2</sub>	Attainment	N/A
CO	Attainment	N/A
Ozone <sup>2</sup>	Attainment	N/A
Lead	Attainment	N/A

### VII. PERMITTED AIR EMISSIONS

Sources of air emissions are listed on the "Inventories" page of the proposed permit.

Estimated emissions of criteria pollutants from the facility, in tons per year (TPY), are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM <sub>10</sub>	0.0	134.98	+134.98
SO <sub>2</sub>	0.0	28.34	+28.34
NO <sub>x</sub>	0.0	117.62	+117.62
CO	0.0	581.84	+581.84
VOC *	0.0	33.94	+33.94
Lead	0.0	0.003	+0.003

PM<sub>10</sub> and VOC compounds classified as LAC 33:III.Chapter 51-regulated toxic air pollutants (TAP) are speciated below. This list encompasses all Hazardous Air Pollutants (HAP) regulated pursuant to Section 112 of the Clean Air Act. Note, however, all TAPs are not HAPs (e.g., ammonia, hydrogen sulfide).

**\*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):**

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
Benzene	0.0	0.01	+0.01
DichloroBenzene	0.0	<0.01	+<0.01

<sup>2</sup> VOC and NO<sub>x</sub> are regulated as surrogates.

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**\*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):**

Pollutant	Before	After	Change
Formaldehyde	0.0	0.46	+0.46
n-Hexane	0.0	11.10	+11.10
Naphthalene	0.0	<0.01	+<0.01
Toluene	0.0	0.02	+0.02
PAH's	0.0	<0.01	+<0.01

**Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs)**

Ammonia	0.0	30.71	+30.71
Arsenic	0.0	<0.01	+<0.01
Barium	0.0	0.01	+0.01
Beryllium	0.0	<0.01	+<0.01
Cadmium	0.0	<0.01	+<0.01
Cobalt	0.0	<0.01	+<0.01
Copper	0.0	<0.01	+<0.01
Manganese	0.0	<0.01	+<0.01
Mercury	0.0	<0.01	+<0.01
Molybdenum	0.0	<0.01	+<0.01
Nickel	0.0	<0.01	+<0.01
Selenium	0.0	<0.01	+<0.01
Vanadium	0.0	0.02	+0.02
Zinc	0.0	0.18	+0.18
<b>Total</b>		<b>42.64</b>	<b>+42.64</b>

The DRI Facility is a major source of criteria pollutants, a major source of HAPs, and a major source of TAPs.

Permitted limits for individual emissions units and groups of emissions units, if applicable, are set forth in the tables of the proposed permit entitled "Emission Rates for Criteria Pollutants" and "Emission Rates for TAP/HAP & Other Pollutants." These tables are part of the permit.

Emissions calculations can be found in Appendix C of the permit application. The calculations address the manufacturer's specifications, fuel composition (e.g., sulfur content), emissions factors, and other assumptions on which the emissions limitations are based and have been reviewed by the permit writer for accuracy.

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### **General Condition XVII Activities**

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. A list of approved General Condition XVII Activities has not been submitted at this time and therefore the proposed permit does not include any identified General Condition XVII Activities.

### **Insignificant Activities**

A list of approved Insignificant Activities has not been submitted at this time and therefore the proposed permit does not include any identified Insignificant Activities.

## **VIII. REGULATORY APPLICABILITY**

Regulatory applicability is discussed in three sections of the proposed permit: Section X (Table 1), Section XI (Table 2), and Specific Requirements. Each is discussed in more detail below.

### Section X (Table 1): Applicable Louisiana and Federal Air Quality Requirements

Section X (Table 1) summarizes all applicable federal and state regulations. In the matrix, a "1" represents a regulation applies to the emissions unit. A "1" is also used if the emissions unit is exempt from the emissions standards or control requirements of the regulation, but monitoring, recordkeeping, and/or reporting requirements apply.

A "2" is used to note that the regulation has requirements that would apply to the emissions unit, but the unit is exempt from these requirements due to meeting a specific criterion, such as it has not been constructed, modified, or reconstructed since the regulation has been effective. If the specific criterion changes, the emissions unit will have to comply at a future date. Each "2" entry is explained in Section XI (Table 2).

A "3" signifies that the regulation applies to this general type of source (e.g., furnace, distillation column, boiler, fugitive emissions, etc.), but does not apply to the particular emissions unit. Each "3" entry is explained in Section XI (Table 2).

If blank, the regulation clearly does not apply to this type of emissions unit.

### Section XI (Table 2): Explanation for Exemption Status or Non-Applicability of a Source

Section XI (Table 2) of the proposed permit provides explanation for either the exemption status or non-applicability of given federal or state regulation cited by 2 or 3 in the matrix presented in Section X (Table 1).

### Specific Requirements

Applicable regulations, as well as any additional monitoring, recordkeeping, and

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reporting requirements necessary to demonstrate compliance with both the federal and state terms and conditions of the proposed permit, are provided in the "Specific Requirements" section. Any operating limitations (e.g., on hours of operation or throughput) are also set forth in this section. Associated with each Specific Requirement is a citation of the federal or state regulation upon which the authority to include that Specific Requirement is based.

### 1. Federal Regulations

#### 40 CFR 60 – New Source Performance Standards (NSPS)

The following subparts are applicable at the DRI Facility: A, and Db. Applicable emission standards, monitoring, test methods and procedures, recordkeeping, and reporting requirements are summarized in the "Specific Requirements" section of the proposed permit.

#### 40 CFR 61 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

No NESHAP provisions are applicable to the DRI Facility.

#### 40 CFR 63 – Maximum Achievable Control Technology (MACT)

No MACT provisions are applicable to the DRI Facility.

#### Clean Air Act §112(g) or §112(j) – Case-By-Case MACT Determinations

A case-by-case MACT determination pursuant to §112(g) or §112(j) of the Clean Air Act was not required.

#### 40 CFR 64 – Compliance Assurance Monitoring (CAM)

Per 40 CFR 64.2(a), CAM applies to each pollutant-specific emissions unit (PSEU) that 1) is subject to an emission limitation or standard, 2) uses a control devices to achieve compliance, and 3) has potential pre-control device emissions that are equal to or greater than 100 percent of the amount, in TPY, required for a source to be classified as a major source.

The following emissions units are subject to CAM: EQT0063, EQT0064, EQT0080, and EQT0081. Applicable CAM provisions have been incorporated into the proposed permit as Specific Requirements 07 – 17, 26-36, 155-165, and 174-184.

#### Acid Rain Program

The Acid Rain Program, 40 CFR Part 72 – 78, applies to the fossil fuel-fired combustion devices listed in Tables 1-3 of 40 CFR 73.10 and other utility units, unless a unit is determined not to be an affected unit pursuant to 40 CFR 72.6(b). LDEQ has incorporated the Acid Rain Program by reference at LAC 33:III.505. Facility is not subject



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to the Acid Rain Program.

### 2. SIP-Approved State Regulations

Applicable state regulations are also noted in Section X (Table 1) of the proposed permit. Some state regulations have been approved by the U.S. Environmental Protection Agency (EPA) as part of Louisiana's State Implementation Plan (SIP). These regulations are referred to as "SIP-approved" and are enforceable by both LDEQ and EPA. All LAC 33:III.501.C.6 citations are federally enforceable unless otherwise noted.

### 3. State-Only Regulations

Individual chapters or sections of LAC 33:III noted by an asterisk in Section X (Table 1) are designated "state-only" pursuant to 40 CFR 70.6(b)(2). Terms and conditions of the proposed permit citing these chapters or sections are not SIP-approved and are not subject to the requirements of 40 CFR Part 70. These terms and conditions are enforceable by LDEQ, but not EPA. All conditions not designated as "state-only" are presumed to be federally enforceable.

#### State MACT (LAC 33:III.Chapter 51)

The DRI Facility is a major source of LAC 33:III.Chapter 51 regulated TAP. The owner or operator of any major source that emits or is permitted to emit a Class I or Class II TAP at a rate equal to or greater than the Minimum Emission Rate (MER) listed for that pollutant in LAC 33:III.5112 shall control emissions of that TAP to a degree that constitutes Maximum Achievable Control Technology (MACT), except that compliance with an applicable federal standard promulgated by the U.S. EPA in 40 CFR Part 63 shall constitute compliance with MACT for emissions of toxic air pollutants. Applicable Part 63 standards are addressed in Section VIII.1 of this Statement of Basis. MACT is not required for Class III TAPs; however, the impact of all TAP emissions must be below their respective Ambient Air Standards (AAS).

MACT determinations were made pursuant to Chapter 51 for the following emissions units: A, B, C, D, and E. State MACT requirements are cited as LAC 33:III.5109.A in the proposed permit.

## IX. NEW SOURCE REVIEW (NSR)

### 1. Prevention of Significant Deterioration (PSD)

The DRI facility's source category is not listed in Table A of the definition of "major stationary source" in LAC 33:III.509. As such, the PSD major source threshold is 250 TPY (of any regulated NSR pollutant).

The DRI Facility is a major stationary source under the PSD program, LAC 33:III.509.

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The emissions increases associated with the proposed DRI facility (without regard to decreases) are as follows:

<u>Pollutant</u>	<u>Project Increase</u>	<u>PSD Significance Level</u>	<u>Netting Required?</u>
PM <sub>10</sub>	135.56	25/15 (PM/PM <sub>10</sub> )	Yes
SO <sub>2</sub>	28.34	40	Yes
NO <sub>x</sub>	117.62	40	Yes
CO	581.84	100	Yes
VOC	33.94	40	Yes

Increases of PM/PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC associated with the proposed project triggered a netting analysis.

<u>Pollutant</u>	<u>Project Increase</u>	<u>Contemporaneous Net Emissions Change</u>	<u>Net Emissions Increase</u>	<u>PSD Significance Level</u>	<u>PSD Review Required?</u>
PM <sub>10</sub>	135.5	467.39	603.03	25/15 (PM/PM <sub>10</sub> )	Yes
SO <sub>2</sub>	28.34	2,936.86	2,965.20	40	Yes
NO <sub>x</sub>	117.6	457.16	574.78	40	Yes
CO	581.8	28,395.47	28,977.31	100	Yes
VOC	33.94	206.72	240.66	40	Yes

The proposed modifications will result in a significant net emissions increase of PM/PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC; therefore, PSD requirements, including best available control technology (BACT), apply for these pollutants.

A list of affected emissions units, baseline actual emissions, and projected actual emissions or potential to emit for each emissions unit, as well as a summary of contemporaneous changes associated with the proposed project, can be found in Section 3 of the permit application. This data has been reviewed by the permit writer.

### BACT

Under current PSD regulations, an analysis of "top down" BACT is required for the control of each regulated pollutant emitted from a new major stationary source in excess of the specified significant emission rates. The top down approach to the BACT process involves determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical, environmental, energy, and/or cost considerations, then it is rejected and the next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated for any technical, environmental, or economic reason. A technically feasible control strategy is one that has been demonstrated to function efficiently on identical or similar processes. Additionally, BACT shall not result in emissions of any pollutant which would exceed any applicable standard under 40 CFR Parts 60 and 61.

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Emissions Source	Source Identifiers	Proposed CO <sub>2</sub> BACT	Proposed PM <sub>10</sub> /PM <sub>2.5</sub> BACT	Proposed NO <sub>x</sub> BACT	Proposed SO <sub>2</sub> BACT	Proposed CO BACT	Proposed VOC BACT
Iron Oxide Storage and Handling	DRI-101, DRI-102, DRI-105, DRI-201, DRI-202, DRI-205	-	Fabric Filter with Enhanced Filter Media	-	-	-	-
Iron Oxide Coating Bin	DRI-103, DRI-203	-	Fabric Filter with Enhanced Filter Media	-	-	-	-
Iron Oxide Fines Storage and Handling	DRI-104, DRI-204	-	Surface Stabilizers, Wet Suppression and Minimize Handling	-	-	-	-
Cooling Towers	DRI-113, DRI-114, DRI-213, DRI-214	-	Cellular Drift Eliminators and Low TDS Cooling Water	-	-	-	-
Product Fines Briquetting	DRI-117	-	High-Energy Wet Scrubber	-	-	-	-
Product Loading	DRI-118	-	High-Energy Wet Scrubber	-	-	-	-
Package Boiler	DRI-109, DRI-209	Good Combustion Practices	No Feasible Control	Low-NOX Burners and SCR	Low-Sulfur Fuel	Good Combustion Practices	Good Combustion Practices
Reformer / Main Flue Gas Stack	DRI-108, DRI-208	Good Combustion Practices. Acid gas separation system. Energy integration.	Fuel Cleaning by Wet Scrubber <sup>1</sup>	Low-NOX Burners, SCR and Low-NOX Fuel	Acid Gas Scrubbing	Good Combustion Practices	Good Combustion Practices
Acid Gas Absorption Vent	DRI-111, DRI-211	Acid gas separation system.	No Feasible Control	-	Sulfur Redox Catalyst	No Feasible Control	-

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Emissions Source	Source Identifiers	Proposed CO <sub>2</sub> BACT	Proposed PM <sub>10</sub> /PM <sub>2.5</sub> BACT	Proposed NO <sub>x</sub> BACT	Proposed SO <sub>2</sub> BACT	Proposed CO BACT	Proposed VOC BACT
Upper Seal Gas Vent	DRI-106, DRI-206	-	Fuel Cleaning by Wet Scrubber <sup>1</sup>	-	-	-	-
Furnace Dedusting	DRI-107, DRI-207	-	High-Energy Wet Scrubber	-	-	-	-
Product Storage Silo	DRI-112, DRI-212	-	High-Energy Wet Scrubber <sup>1</sup>	-	-	-	-
Product Storage and Handling	DRI-115, DRI-116,	-	High-Energy Wet Scrubber	-	-	-	-
Hot Flare	DRI-110, DRI-210	-	Fuel Cleaning by Wet Scrubber <sup>1</sup>	Low-NOX Fuel	No Feasible Control	Good Combustion Practices	Good Combustion Practices

A more thorough discussion of the BACT selection process can be found in PSD-LA-751. BACT and any other associated monitoring, recordkeeping, and reporting requirements necessary to determine compliance with the PSD permit are cited as "LAC 33:III.509" in the proposed Title V permit.

### Air Quality Impact Analyses

Prevention of Significant Deterioration regulations require an analysis of existing air quality for those pollutants emitted in significant amounts from a proposed new major stationary source. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO and Pb are pollutants of concern in this case.

Modeling was conducted using AERMOD.

#### *Screening Modeling*

Pollutant	Averaging Period	Preliminary Screening Concentration (µg/m <sup>3</sup> )	Level of Significant Impact (µg/m <sup>3</sup> )	Significant Monitoring Concentration (µg/m <sup>3</sup> )	Preconstruction Monitoring Required?	Refined Modeling Required?
PM <sub>10</sub>	Annual	2.4	1	-	No	Yes
	24-hour	7.8	5	10	No	Yes
PM <sub>2.5</sub>	Annual	0.65	0.3	-	No	Yes
	24-hour	2.2	1.2	-	No	Yes
SO <sub>2</sub>	1-hour	2.6	8	-	No	No

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Pollutant	Averaging Period	Preliminary Screening Concentration ( $\mu\text{g}/\text{m}^3$ )	Level of Significant Impact ( $\mu\text{g}/\text{m}^3$ )	Significant Monitoring Concentration ( $\mu\text{g}/\text{m}^3$ )	Preconstruction Monitoring Required?	Refined Modeling Required?
NO <sub>x</sub>	3-hour	1.2	25	-	No	No
	24-hour	0.03	5	13	No	No
	Annual	0.05	1	-	No	No
	1-hour	7.45*	7.5	-	No	No
	Annual	0.46	1	14	No	No
CO	1-hour	21.5	2000	-	No	No
	8-hour	11.5	500	575	No	No
Pb	3-month rolling average	0.001	0.01	0.1	No	No

\*Represents NO<sub>x</sub> 1-hour modeling performed for both the DRI and Pig Iron facilities combined.

Modeling of SO<sub>2</sub>, NO<sub>x</sub>, CO and Pb emissions from the proposed project indicates that the maximum offsite ground level concentrations of these pollutants will be below their respective PSD ambient significance levels and preconstruction monitoring levels. Therefore, pre-construction monitoring, refined NAAQS modeling, and increment consumption analyses were not required.

However, predicted concentrations of PM<sub>10</sub>, and PM<sub>2.5</sub> exceed their respective ambient significance levels. Consequently, refined NAAQS modeling and increment consumption analyses were required.

### *Refined Modeling*

Pollutant	Averaging Period	Modeled + Background Concentration ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	Modeled PSD Increment Consumption ( $\mu\text{g}/\text{m}^3$ )	Allowable Class II PSD Increment ( $\mu\text{g}/\text{m}^3$ )
PM <sub>10</sub>	24-hour	106.9	150	24.8	30
	Annual	46.7	50	-12.4	17
PM <sub>2.5</sub>	24-hour	25.9	35	-	-
	Annual	11.3	15	-	-

As shown above, refined modeling indicates compliance with the NAAQS and PSD Increments.

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See Table 2 – Air Quality Analysis Summary of the proposed PSD permit for more detailed modeling results.

### 2. Nonattainment New Source Review (NNSR)

The DRI Facility is located in an attainment area; therefore, NNSR does not apply.

### 3. Notification of Federal Land Manager

The Federal Land Manager (FLM) is responsible for evaluating a facility's projected impact on the Air Quality Related Values (AQRV) (e.g., visibility, sulfur and nitrogen deposition, any special considerations concerning sensitive resources, etc.<sup>3</sup>) and recommending that LDEQ either approve or disapprove the facility's permit application based on anticipated impacts. The FLM also may suggest changes or conditions on a permit. However, LDEQ makes the final decision on permit issuance. The FLM also advises reviewing agencies and permit applicants about other FLM concerns, identifies AQRV and assessment parameters for permit applicants, and makes ambient monitoring recommendations.

If LDEQ receives a PSD or NNSR permit application for a facility that "may affect" a Class I area, the FLM charged with direct responsibility for managing these lands is notified.

The meaning of the term "may affect" is interpreted by EPA policy to include all major sources or major modifications which propose to locate within 100 kilometers (km) of a Class I area. However, if a major source proposing to locate at a distance greater than 100 km is of such size that LDEQ or the FLM is concerned about potential impacts on a Class I area, LDEQ can ask the applicant to perform an analysis of the source's potential emissions impacts on the Class I area. This is because certain meteorological conditions, or the quantity or type of air emissions from large sources located further than 100 km, may cause adverse impacts. In order to determine whether a source located further than 100 km may affect a Class I area, LDEQ uses the Q/d approach.

Q/d refers to the ratio of the sum of the net emissions increase (in tons) of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and H<sub>2</sub>SO<sub>4</sub> to the distance (in kilometers) of the facility from the nearest boundary of the Class I area.

$$Q/d = \frac{PM_{10(NEI)} + SO_{2(NEI)} + NO_{x(NEI)} + H_2SO_{4(NEI)}^4}{\text{Class I km}}$$

Where:

<sup>3</sup> See <http://www2.nature.nps.gov/air/Permits/ARIS/AQRV.cfm>.

<sup>4</sup> If both NNSR and PSD review are required, the higher of the two "net emissions increase" values has been selected. The net emissions increase for NNSR and PSD purposes may be different due to differing contemporaneous periods. If the net emissions increase of any pollutant is negative, the value used in the equation has been set to zero. If the project did not trigger a netting analysis, LDEQ uses the project increase (see §504.A.3 (NNSR) and §509.A.4 (PSD)). In this case, the value will be less than the pollutant's significance level.

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PM <sub>10</sub> (NEI)	=	net emissions increase of PM <sub>10</sub>
SO <sub>2</sub> (NEI)	=	net emissions increase of SO <sub>2</sub>
NO <sub>x</sub> (NEI)	=	net emissions increase of NO <sub>x</sub>
H <sub>2</sub> SO <sub>4</sub> (NEI)	=	net emissions increase of H <sub>2</sub> SO <sub>4</sub>
Class I km	=	distance to nearest Class I area (in kilometers)

If  $Q/d \geq 4$ , LDEQ will formally notify the FLM in accordance with LAC 33:III.504.E.1 / LAC 33:III.509.P.1.

In this instance,

$$Q/d = \frac{119.41 + 28.28 + 113.22 + 0.00}{192} = 1.36$$

LDEQ has notified the Federal Land Manager for Breton National Wildlife Refuge in accordance with LAC 33:III.504.E.1 / LAC 33:III.509.P.1. Modeling included in the application (Section/Appendix 00) demonstrates that the proposed project will not adversely impact visibility in a Class I area. Reference any correspondence from the FLM supportive of that conclusion.

#### 4. Reasonable Possibility

As previously mentioned, increases of Lead associated with the proposed project did not trigger PSD review. Because the applicant elected to use "potential to emit" in lieu of "projected actual emissions" to determine the project increase, there is no "reasonable possibility" that the proposed project may result in a significant emissions increase.

## X. ADDITIONAL MONITORING AND TESTING REQUIREMENTS

In addition to the monitoring and testing requirements set forth by applicable state and federal regulations (see Section VIII of this Statement of Basis), a number of "LAC 33:III.507.H.1.a" and/or "LAC 33:III.501.C.6" conditions may appear in the "Specific Requirements" section of the proposed permit. These conditions have been added where no applicable regulation exists or where an applicable regulation does not contain sufficient monitoring, recordkeeping, and/or reporting provisions to ensure compliance. LAC 33:III.507.H.1.a provisions, which may include recordkeeping requirements, are intended to fulfill Part 70 periodic monitoring obligations under 40 CFR 70.6(a)(3)(i)(B).

<u>ID</u>	<u>Description</u>	<u>Pollutant</u>	<u>Method</u>	<u>Frequency</u>
DRI-103	DRI Unit No. 1 Coating Bin Filter	Particulate	Visible Emissions	Daily
DRI-203	DRI Unit No. 2 Coating Bin Filter	Particulate	Visible Emissions	Daily
	DRI Unit No. 1 Furnace Feed			
DRI-105	Conveyor Baghouse	Particulate	Visible Emissions	Daily

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<u>ID</u>	<u>Description</u>	<u>Pollutant</u>	<u>Method</u>	<u>Frequency</u>
	DRI Unit No. 1 Furnace Feed			
DRI-205	Conveyor Baghouse	Particulate	Visible Emissions	Daily
	DRI Unit No. 1 Furnace Dust			
DRI-107	Collection	Particulate	Visible Emissions	Daily
	DRI Unit No. 1 Furnace Dust			
DRI-207	Collection	Particulate	Visible Emissions	Daily
	DRI Unit No. 1 Product Storage			
DRI-112	Silo Dust Collection	Particulate	Scrubber flow	Every 4 hours
	DRI Unit No. 1 Product Storage			
DRI-212	Silo Dust Collection	Particulate	Scrubber flow	Every 4 hours
DRI-115	Product Screen Dust Collection	Particulate	Scrubber flow	Every 4 hours
	Screened Product Transfer Dust			
DRI-116	Collection	Particulate	Scrubber flow	Every 4 hours
DRI-117	Briquetting Mill	Particulate	Scrubber flow	Every 4 hours
DRI-118	DRI Barge Loading Dock	Particulate	Scrubber flow	Every 4 hours

## XI. OPERATIONAL FLEXIBILITY

### Emissions Caps

An emissions cap is a permitting mechanism to limit allowable emissions of two or more emissions units below their collective potential to emit (PTE). The proposed permit does not establish an emissions cap.

### Alternative Operating Scenarios

LAC 33:III.507.G.5 allows the owner or operator to operate under any operating scenario incorporated in the permit. Any reasonably anticipated alternative operating scenarios may be identified by the owner or operator through a permit application and included in the permit. The proposed permit does include an alternative operating scenario. Nucor is investigating the potential of a DRI process that does not require a reformer as part of the design. A process heater provides the energy input necessary to heat the furnace.

### Streamlined Requirements

When applicable requirements overlap or conflict, the permitting authority may choose to include in the permit the requirement that is determined to be most stringent or protective as detailed in EPA's "White Paper Number 2 for Improved Implementation of the Part 70 Operating Permits Program" (March 5, 1996). The overall objective is to determine the set of permit terms and conditions that will assure compliance with all applicable requirements for an emissions unit or group of emissions units so as to eliminate redundant or conflicting requirements. The proposed permit does not contain streamlined provisions.



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### XII. PERMIT SHIELD

A permit shield, as described in 40 CFR 70.6(f) and LAC 33:III.507.I, provides an "enforcement shield" which protects the facility from enforcement action for violations of applicable federal requirements. It is intended to protect the facility from liability for violations if the permit does not accurately reflect an applicable federal or federally enforceable requirement.

The proposed permit does not establish a permit shield.

### XIII. IMPACTS ON AMBIENT AIR

Modeling of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC is addressed in Section IX.1 of this Statement of Basis.

In addition to modeling for PSD purposes, several Toxic Air Pollutants were modeled to determine compliance with the Louisiana Ambient Air Standards (AAS). Modeling demonstrates that emissions from the Facility will not violate National Ambient Air Quality Standards (NAAQS) for criteria pollutants and Louisiana AAS for toxic air pollutants. Therefore, Facility will not cause air quality impacts which could adversely affect human health or the environment.

Pollutant	Time Period	Calculated Maximum Ground Level Conc.	NAAQS or AAS
PM <sub>2.5</sub>	Annual	11.3 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24 hr. avg	25.9 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>
PM <sub>10</sub>	Annual	106.9 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
	24 hr. avg.	11.3 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
SO <sub>2</sub> *	Annual	0.05 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>
	24 hr. avg.	0.03 µg/m <sup>3</sup>	365 µg/m <sup>3</sup>
	3 hr. avg.	1.2 µg/m <sup>3</sup>	1300 µg/m <sup>3</sup>
	1 hr. avg.	2.6 µg/m <sup>3</sup>	195 µg/m <sup>3</sup>
NO <sub>x</sub> *	Annual	0.46 µg/m <sup>3</sup>	100 µg/m <sup>3</sup>
	1 hr. avg	7.45 µg/m <sup>3</sup>	189 µg/m <sup>3</sup>
CO*	8 hr. avg.	11.5 µg/m <sup>3</sup>	10,000 µg/m <sup>3</sup>
	1 hr. avg.	21.5 µg/m <sup>3</sup>	40,000 µg/m <sup>3</sup>
Pb*	Rolling 3-	0.001 µg/m <sup>3</sup>	0.15 µg/m <sup>3</sup>
Ammonia	8 hr. avg.	1.32 µg/m <sup>3</sup>	640 µg/m <sup>3**</sup>
Barium	8 hr. avg.	0.0011 µg/m <sup>3</sup>	11.90 µg/m <sup>3**</sup>
Formaldehyde	Annual	0.0013 µg/m <sup>3</sup>	7.69 µg/m <sup>3**</sup>
n-Hexane	8 hr. avg.	0.43 µg/m <sup>3</sup>	4190 µg/m <sup>3**</sup>
Nickel	Annual	0.00004 µg/m <sup>3</sup>	0.21 µg/m <sup>3**</sup>
Zinc	8 hr. avg.	0.007 µg/m <sup>3</sup>	119 µg/m <sup>3**</sup>

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\*Screening level result. Modeling indicated that concentrations were below the respective significance levels; therefore refined modeling was not required.

\*\*Ambient air standard set forth in LAC 33:III.5112.

### XIV. COMPLIANCE HISTORY AND CONSENT DECREES

Nucor is proposing to construct and operate the DRI Facility. Thus, there are no enforcement actions pertaining to the facility.

### XV. REQUIREMENTS THAT HAVE BEEN SATISFIED

The following state and/or federal obligations have been satisfied and are therefore not included as Specific Requirements.

<u>Source ID</u>	<u>Citation</u>	<u>Description</u>
None		

### XVI. OTHER REQUIREMENTS

Executive Order No. BJ 2008-7 directs all state agencies to administer their regulatory practices, programs, contracts, grants, and all other functions vested in them in a manner consistent with Louisiana's Comprehensive Master Plan for a Sustainable Coast and public interest to the maximum extent possible. If a proposed facility or modification is located in the Coastal Zone, LDEQ requires the applicant to document whether or not a Coastal Use Permit is required, and if so, whether it has been obtained. Coastal Use Permits are issued by the Coastal Management Division of the Louisiana Department of Natural Resources (LDNR).

The facility is located in the Coastal Zone; Coastal Use Permit P081462 has been issued by the LDNR.

### XVII. PUBLIC NOTICE/PUBLIC PARTICIPATION

Written comments, written requests for a public hearing, or written requests for notification of the final decision regarding this permit action may be submitted to:

Ms. Soumaya Ghosn  
LDEQ, Public Participation Group  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313

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Written comments and/or written requests must be received prior to the deadline specified in the public notice. If LDEQ finds a significant degree of public interest, a public hearing will be held. All comments will be considered prior to a final permit decision.

LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The permit application, proposed permit, and this Statement of Basis are available for review at LDEQ, Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, Louisiana. Viewing hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday (except holidays). Additional copies may be viewed at the local library identified in the public notice. The available information can also be accessed electronically via LDEQ's Electronic Document Management System (EDMS) on LDEQ's public website, [www.deq.louisiana.gov](http://www.deq.louisiana.gov).

Inquiries or requests for additional information regarding this permit action should be directed to the contact identified on page 1 of this Statement of Basis.

Persons wishing to be included on the public notice mailing list or for other public participation-related questions should contact LDEQ's Public Participation Group at P.O. Box 4313, Baton Rouge, LA 70821-4313; by e-mail at [maillistrequest@ldeq.org](mailto:maillistrequest@ldeq.org); or contact LDEQ's Customer Service Center at (225) 219-LDEQ (219-5337). Alternatively, individuals may elect to receive public notices via e-mail by subscribing to LDEQ's Public Notification List Service at [http://www.doa.louisiana.gov/oes/listservpage/ldeq\\_pn\\_listserv.htm](http://www.doa.louisiana.gov/oes/listservpage/ldeq_pn_listserv.htm).

Permit public notices can be viewed at LDEQ's "Public Notices" webpage, <http://www.deq.louisiana.gov/apps/pubNotice/default.asp>. Electronic access to each proposed permit and Statement of Basis current on notice is also available on this page. General information related to public participation in permitting activities can be viewed at [www.deq.louisiana.gov/portal/tabid/2198/Default.aspx](http://www.deq.louisiana.gov/portal/tabid/2198/Default.aspx).

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## APPENDIX A - ACRONYMS

AAS	Ambient Air Standard (LAC 33:III.Chapter 51)
AP-42	EPA document number of the Compilation of Air Pollutant Emission Factors
BACT	Best Available Control Technology
BTU	British Thermal Units
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAM	Compliance Assurance Monitoring, 40 CFR 64
CEMS	Continuous Emission Monitoring System
CMS	Continuous Monitoring System
CO	Carbon monoxide
COMS	Continuous Opacity Monitoring System
CFR	Code of Federal Regulations
EI	Emissions Inventory (LAC 33:III.919)
EPA	(United States) Environmental Protection Agency
EIQ	Emission Inventory Questionnaire
ERC	Emission Reduction Credit
FR	Federal Register or Fixed Roof
H <sub>2</sub> S	Hydrogen sulfide
H <sub>2</sub> SO <sub>4</sub>	Sulfuric acid
HAP	Hazardous Air Pollutants
Hg	Mercury
HON	Hazardous Organic NESHAP
IBR	Incorporation by Reference
LAER	Lowest Achievable Emission Rate
LDEQ	Louisiana Department of Environmental Quality
M	Thousand
MM	Million
MACT	Maximum Achievable Control Technology
MEK	Methyl ethyl ketone
MIK	Methyl isobutyl ketone
MSDS	Material Safety Data Sheet
MTBE	Methyl tert-butyl ether
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industrial Classification System (replacement to SIC)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMOC	Non-Methane Organic Compounds

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## APPENDIX A - ACRONYMS

NO <sub>x</sub>	Nitrogen Oxides
NNSR	Nonattainment New Source Review
NSPS	New Source Performance Standards
NSR	New Source Review
OEA	LDEQ Office of Environmental Assessment
OEC	LDEQ Office of Environmental Compliance
OES	LDEQ Office of Environmental Services
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter less than 10 microns in nominal diameter
PM <sub>2.5</sub>	Particulate Matter less than 2.5 microns in nominal diameter
ppm	parts per million
ppmv	parts per million by volume
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RBLCL	RACT-BACT-LAER Clearinghouse
RMP	Risk Management Plan (40 CFR 68)
SICC	Standard Industrial Classification Code
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
TAP	Toxic Air Pollutants (LAC 33:III.Chapter 51)
TOC	Total Organic Compounds
TPY	Tons Per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
µg/m <sup>3</sup>	Micrograms per Cubic Meter
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
VOL	Volatile Organic Liquid
VRU	Vapor Recovery Unit

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## APPENDIX B – GLOSSARY

*Best Available Control Technologies (BACT)* – an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this Part (Part III) which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

*CAM - Compliance Assurance Monitoring* – A federal air regulation under 40 CFR Part 64.

*Carbon Monoxide (CO)* – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

*Cooling Tower* – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

*Continuous Emission Monitoring System (CEMS)* – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

*Cyclone* – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

*Federally Enforceable Specific Condition* – A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

*Grandfathered Status* – those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

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*Lowest Achievable Emission Rate (LAER)* – for any source, the more stringent rate of emissions based on the following:

- a. the most stringent emissions limitation that is contained in the implementation plan of any state for such class or category of major stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or
- b. the most stringent emissions limitation that is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new or modified major stationary source to emit any pollutant in excess of the amount allowable under an applicable new source standard of performance.

*NESHAP* – National Emission Standards for Hazardous Air Pollutants – Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63.

*Maximum Achievable Control Technology (MACT)* – the maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

*NSPS* – New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60.

*New Source Review (NSR)* – a preconstruction review and permitting program applicable to new or modified major stationary sources of criteria air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

*Nonattainment New Source Review (NNSR)* – a New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) set forth at 40 CFR Part 50. NNSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

*Organic Compound* – any compound of carbon and another element. Examples: methane (CH<sub>4</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), carbon disulfide (CS<sub>2</sub>).

*Part 70 Operating Permit* – also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507.

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*PM<sub>10</sub>* – particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

*Potential to Emit (PTE)* – the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

*Prevention of Significant Deterioration (PSD)* – a New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

*Selective Catalytic Reduction (SCR)* – A non-combustion control technology that destroys NO<sub>x</sub> by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO<sub>x</sub> into molecular nitrogen and water.

*Sulfur Dioxide (SO<sub>2</sub>)* – An oxide of sulphur.

*TAP* – LDEQ acronym for toxic air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3.

*"Top Down" Approach* – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

*Title V permit* – see Part 70 Operating Permit.

*Volatile Organic Compound (VOC)* – any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the Administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.